

UNIVERSITI TEKNOLOGI MARA PAHANG

**DIGIT RATIO AS A PREDICTOR OF CARDIOVASCULAR
ENDURANCE AND SPEED PERFORMANCE AMONG
CHILDREN**

IZYANA NAJIHAH BINTI ISMAIL

2012522985

**Research Project Report Submitted in Partial Fulfilment of the Requirements
for the**

Bachelor of Sports Science (Hons.)

Faculty of Sports Science and Recreation

JANUARY 2015

DECLARATION OF ORIGINAL WORK

BACHELOR OF SPORTS SCIENCE (HONS)

FACULTY OF SPORTS SCIENCE AND RECREATION

UNIVERSITI TEKNOLOGI MARA (UiTM) PAHANG


I, IZYANA NAJIHAH BINTI ISMAIL (I/C Number: 921124-01-5818)

Hereby, declare that:

This work has not previously been accepted in substance for any degree, locally or overseas, and is not being concurrently, submitted for this degree or any other degree.

This project paper is the result of my independent work and investigation, except otherwise stated. I absolve Universiti Teknologi MARA (UiTM) Pahang and Faculty of Sports Science and Recreation from any blame as result of my work.

All verbatim extracts have been distinguished by quotation marks and sources of my information have been specifically acknowledgement.

Signature : 

I/C Number : 921124-01-5818

UiTM ID : 2012522985

Date : JANUARY 2015

ABSTRACT

DIGIT RATIO AS A PREDICTOR OF CARDIOVASCULAR ENDURANCE AND SPEED PERFORMANCE AMONG CHILDREN

The ratio between 2D (index finger) and 4D (ring finger) has produced much enthusiasm among specialist. Previous research shows that men tend to have low digit ratio than women. It showed that 2D:4D, a putative correlate of prenatal testosterone, has been found to relate performance in sports and athletic which is low 2D:4D that have high prenatal testosterone correlate with high performance. Nowadays, the student of children's achievement in sports has now become important factors of identifying sporting athletic ability at early ages of child development. The objective of this study is to investigate the relationship between low digit ratio and high digit ratio towards cardiovascular endurance and speed among children. This study was used purposive sampling technique by examining the digit ratio of male and female children aged 11.13 ± 0.82 years ($n=40$) by putting them through physical fitness measures to examine the relationship of the digit ratio with performance in the tests. 20 meter shuttle run test and 50 meter sprint test were conducted. This study finds the strong relationship between low digit ratio towards cardiovascular endurance, which is 2.95 ± 0.52 , $p = .001$ and speed performance which is, 9.33 ± 0.97 , $p = .001$ rather than high digit ratio. The results present more opportunities to be explored in talent identification, especially in the youth, establishing the value of using the 2D:4D ratio as part of the process of identifying sporting ability.

Keywords—digit ratio, testosterone, children, sporting ability

TABLE OF CONTENTS

| | Page |
|-------------------------------|-------------|
| DECLARATION | i |
| ACKNOWLEDGEMENTS | ii |
| TABLE OF CONTENTS | iii |
| LIST OF TABLES | vi |
| LIST OF FIGURES | vii |
| ABSTRACT | viii |
| CHAPTER | |
| I INTRODUCTION | |
| 1.1 Background of Study | 1 |
| 1.2 Statement of Problem | 5 |
| 1.3 Research Objective | 6 |
| 1.4 Research Hypotheses | 7 |
| 1.5 Operational Term | 8 |
| 1.6 Limitation of the Study | 10 |
| 1.7 Delimitation of the Study | 11 |
| 1.8 Assumptions | 12 |
| 1.9 Significant of Study | 12 |

II LITERATURE REVIEW

| | | |
|-----|--|----|
| 2.1 | Children and Sports | 13 |
| 2.2 | Digit Ratio 2D:4D | 15 |
| 2.3 | Talent Identification | 17 |
| 2.4 | Testosterone Hormone Exposure to 2D:4D Digit Ratio | 18 |
| 2.5 | Aerobic and Anaerobic Performance | 19 |
| 2.6 | Fitness and Health in Children | 20 |
| 2.7 | Cardiovascular Endurance | 22 |
| 2.8 | Speed | 25 |

III METHODOLOGY

| | | |
|-------|--|----|
| 3.1 | Introduction | 26 |
| 3.2 | Research Design | 26 |
| 3.3 | Subject Selection | 27 |
| 3.4 | Measurement, Tools and Instrumentation | 27 |
| 3.4.1 | Assessment Digit Ratio (2D:4D) | 27 |
| 3.4.2 | Anthropometric Assessment | 28 |
| 3.4.3 | Physical Fitness Measurement | 29 |
| 3.5 | Research Method Work Flow | 32 |
| 3.6 | Statistical Analysis | 33 |